IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

BENOIT BOLSEE

Serial No.: 09/372,129   Art Unit: 2664

Filed: August 11, 1999   Examiner: R. Jain

For: FRAME BUNDLING AND PAYLOAD SWITCHING

APPEAL BRIEF

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<u>REAL PARTY IN INTEREST</u>

WORLD TELECOM LABS N. V. is the real party in interest in this case by virtue of an assignment recorded on reel/frame 010167/0649.

<u>RELATED APPEALS AND INTERFERENCES</u>

No other related appeals or interferences are pending.

STATUS OF CLAIMS

Claims 4-7,9-15, all the pending claims, were finally rejected over references of record.

Claims 1, 2, 3, and 8 have been cancelled.

A copy of the appealed claims is appended hereto in the CLAIMS APPENDIX.

STATUS OF AMENDMENTS

No amendments were presented after the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention (Specification pages 1-9; Figures 1-2) relates to efficient digitized voice over data transfer over data network.

A computer-based switch 1, shown in Figure 1, acts as a protocol converter/adapter for the various terminals 9, such as multimedia PC's 7 or telephones 8, connected to the switch 1 either directly or indirectly. Indirect connections include a PSTN or PABX 2 or a local area network, LAN, or web connection 4. Uncompressed calls 3 received from the PSTN (Public Switched Telephone Network) or directly from a PABX (Private Automatic Branch eXchange) 2 are compressed in switch 1 using a standard compression module 13, for example the G.723.1 algorithm on a digital signal processor (DSP) board. The resulting voice packets and call control information 15 are packaged into an internal format that copes with various voice quality and PSTN/ISDN (Integrated Services Digital Network) Protocols (specification page 6, lines 9-21).

Compressed calls 5 received from multi-media PC's 7 over LAN (Local Area Network) or Internet lines 4 are converted and packaged with address information into the internal format 18 by bridging modules 17 without decompression (specification page 6, lines 22-25).

One aspect of the invention, frame bundling, combines in combining and switching modules 19 the voice packets 15 and 18 coming from the different terminals 9 into longer frames so that

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the number of frames and therefore the overhead is reduced on the data network 11. Combining/switching module 19 combines the internally formatted voice packets 15 and 18 into longer frames (specification page 7, lines 1-6).

The longer frames 35, in Figure 2, with the switch addresses are output from their respective switches 1 and sent over a connection line 20 to the data network 11 (specification page 7, lines 7-9).

Frame bundling is important, because the network load depends on the number of packets, not on the packet size. Frame bundling may be done only with the terminals 9 that are connected to the same local origination and destination switch 1. The efficiency of this invention depends on the number of switches 1 in the network and the amount of traffic between any pair of switches (specification page 7, lines 10-16).

A second aspect of the invention, payload switching, then sets up one or more central nodes 21 that are connected to a plurality of other origination/destination switches 41, 51 and 61. Payload switching is the action of disassembling one or more long combined frames from the several local switches 1 and then reassembling them into one or more other long combined frames addressed to specific local switches. The central node 21 is able to disassemble and reassemble combined frames 35 and may be considered as a voice packet switch. The disassembled and then reassembled frames 37 are sent back to the switches 41, 51 and 61 from the central node 21 (specification page 7, lines 17-26).

Figure 2 illustrates the advantage of payload switching in a large network. Particular switches 1 are indicated as switches 41, 51 and 61. Many such switches 1 are connected via the data network 11 to the central node switch 21 (specification page 8, lines 1-4).

In Figure 2, switch 51 has two terminals 53 and 55 that correspond to lines 3 and 5 in Figure 1. Arrows 81, 83, 85 and 87 represent intended connections between terminals 9 such as phones 8 or computers 7 that are connected to the lines 43, 45, 53, 55, 56, 63, 65, and 66. For example, arrow 81 shows an intended connection between the terminals connected to lines 63 and 45. Packets from switch 61 as shown by intended connections 81, 83 and 85 are sent to two different switches 51 and 41 (specification page 8, lines 5-12).

Without payload switching, frame bundling could not be used and there would be no reduction of overhead. With payload switching, the switch 61 is always sending its voice packets 64, 66, 68 to the central node 21, which builds the frames according to the runtime switching tables. These tables are set when calls are established across the network. This mechanism is similar to the establishment of a phone call across the PSTN, except that the switched units are voice packets 33 inside data frames 35, instead of timeslots inside TDM streams (specification page 8, lines 13-21).

When voice packets are combined in large frames, a small 4-byte header is added to the voice data. The 4-byte header

contains the type of packet (voice, fax, silence, modem, dtmf, etc.), the length of the packet (variable packet sizes are supported), and the destination channel (for payload switching) (specification page 8, lines 22-26). The 4-byte header replaces the 40-byte IP header that is appended to every voice packet in the absence of frame bundling (specification page 9, lines 1-2).

GROUNDS OF REJECTION

I.   Claims 4-7 and 9-15 stand rejected under 35 U.S.C. 102(b) as anticipated by Ching et al. (U.S. Patent 4,665,514).

II.   Claims 5-7 and 14 stand rejected under 35 U.S.C. 103(a) as obvious over Ching et al. (U.S. Patent 4,665,514) in view of Goldberg et al. (U.S. Patent 6,389,038 B1).

III. Claim 11 stands rejected under 35 U.S.C. 103(a) as being obvious over Ching et al. (U.S. Patent 4,665,514) in view of Chuah et al. (U.S. Patent 6,408,001 B1).

ARGUMENTS

The present claims are patentable under 35 U.S.C. 102(b).

For an invention to be anticipated, it must be demonstrated that each and every element of the claimed invention is present in the "four corners" of a single prior art, either expressly described therein or under the principle of inherency. Lewmar Marine Inc. v Barient Inc., 3 USPQ2d 1766, 1767-1768 (CAFC, 1987). The absence from prior art reference any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible, Inc., 230 USPQ 81, 84 (Fed. Cir. 1986).

I.   Claims 4-7 and 9-15 are patentable under 35 U.S.C. 102(b) over Ching (US Patent 4,665,514).

Ching relates to the traditional Digital Circuit Multiplication Equipment (DCME) technology which is inapposite to the claimed invention.

The DCME technology involves conversion of N circuit switched carrier lines (T1/E1) into smaller number M of data carrier lines by compressing the audio signal received on the circuits, multiplexing with signalling information and packing the resulting data on the data-carrier lines. The ratio of N/M can be 4 to 16 depending on compression techniques used.

DCME must work in pairs and always in point-to-point configuration because the packaging format is highly proprietary and designed for minimal overhead. It is not possible to put this data on a general purposed packet network, such as the internet, without adding routing header to each voice packet

which would increase the bandwidth considerably. Hence the remote DCME will decompress the data and regenerate N circuit switched lines identical to the original N lines so that the system looks from the outside exactly like N point-to-point carrier lines interconnecting two circuit switches.

DCME are largely deployed in the world to save bandwidth on expensive routes and a phone call could go through several DCME pairs while it is routed through the public telephone network which effects the voice quality due to the multiple compression/decompression stages.

Ching's invention takes the DCME concept and improves it by implementing a data switch instead of a TDM switch at the nodes of the network. This way the voice degradation which is inherent to multiple compression/decompression is avoided.

To be anticipating, a prior art reference must disclose "each and every limitation of the claimed invention[,]... must be enabling[,] and must describe...[the] claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention." In re Paulsen, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994).

Claim 4:

Claim 4 describes an apparatus for sending digitized voice over a data network, comprising a plurality of terminals for transmitting digitized signals, wherein the digitized signals may be compressed and uncompressed; a plurality of switches for receiving the digitized signals and for acting as a protocol

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converter/adapter for the incoming signals from the plurality of terminals; first lines for connecting the plurality of terminals to at least one of the plurality of switches; wherein each of the plurality of switches further comprises a compression module for compressing the incoming voice signals to digitized voice packets when the incoming voice signals are uncompressed and for packaging the compressed digitized data packets in a format compatible with web protocols; wherein each of the plurality of switches further comprises a bridging module for packaging the incoming digitized data packets into a format compatible with web protocols when the incoming packets are compressed; wherein each of the plurality of switches further comprises a combining/switching module within the switch for combining the formatted digitized voice packets into long frames; a data network for receiving the long frames from the plurality of switches; a second line for connecting the plurality of switches to the data network; and a central switch for receiving the longer frames from the data network and for disassembling, switching and reassembling the longer frames and for returning the reassembled frames to the data network. Ching does not describe, teach or inherently provide every element of claim 4.

Claim 5:

Claim 5 describes the first lines being selected from the group consisting of PSTN lines, PABX lines, LAN lines, Internet lines, and other lines, which is not described nor taught by Ching.

Claim 6:

Claim 6 defines that the second line is selected from the group consisting of ethernet lines, V35 lines, G704 lines, and other lines, which is not described nor taught by Ching.

Claim 7:

Claim 7 adds that the data network is selected from the group consisting of an Internet protocol (IP) network, a frame relay network, an X25 network, a leased line network, and other networks, which is not described nor taught by Ching.

Claim 9:

Claim 9 describes a method for combining incoming digitized voice packets into longer frames, comprising receiving incoming voice and data signals; compressing the incoming voice signals to digitized data packets when the incoming voice signals are uncompressed; packaging the compressed digitized voice packets into a format compatible with web protocols; bridging the incoming data signals to digitized data packets when the incoming digitized data signals are compressed; packaging the bridged digitized data packets into a format compatible with web protocols; combining the formatted digitized data packets into first long frames; transmitting the first long frames over a data network, receiving the first long frames in a central node switch; disassembling the formatted data packets from the first long frames; assembling the disassembled data packets into second long frames; and transmitting the second long frames to switches.

Ching does not describe, teach or inherently provide every element of claim 9.

Claim 10:

Claim 10 describes a method for sending digitized packets over a data network, comprising receiving incoming voice signals from a plurality of telephones and receiving compressed data signals from computers in a lesser plurality of switches; compressing the incoming voice signals into digitized data packets, when the incoming voice signals are uncompressed; packaging the compressed digitized data packets into a format compatible with network protocols; bridging the incoming digitized data signals into digitized data packets, when the incoming digitized data signals are compressed; packaging the bridged digitized data packets into a format compatible with network protocols; combining the formatted digitized data packets into first long frames; sending the first long frames from the plurality of switches to a data network; sending the first long frames from the data network to a central switch; disassembling the formatted data packets within the first long frames in the central switch; reassembling the formatted data packets into second long frames in the central switch; and sending the reassembled frames from the central switch through the data network and the plurality of switches to the telephones and computers. Ching does not describe, teach or inherently provide every element of claim 10.

Claim 11:

Claim 11 adds that the combining the formatted digitized data packets into the first long frames further comprises adding a 4-byte control information header to each of the digitized data packets prior to combining the digitized voice packets, which is not described nor inherently provided in Ching.

Claim 12:

Claim 12 describes a switch apparatus for combining digitized voice signals into large frames, comprising a protocol converter/adapter switch for receiving the incoming digitized voice signals and for compressing the incoming voice signals into digitized voice packets from a plurality of terminals, and for adding a header with packet type and length and channel address; a compression module for compressing the incoming digitized voice signals into voice packets when the incoming signals are uncompressed and for packaging the compressed digitized voice packets into a format compatible with web protocols; a bridging module in the switch for packaging the incoming digitized voice signals as compressed voice packets in a format compatible with web protocols when the incoming packets are compressed and for adding a header with packet type and length and channel address; and a combining/switching module connected to the compression module and to the bridging module within the switch for combining the formatted digitized voice packets into longer frames. Ching does not describe, teach or inherently provide every element of claim 12.

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Claim 13:

Claim 13 describes an apparatus for sending large frames of digitized packets over a data network, comprising a plurality of terminals for transmitting digitized voice signals or compressed data signals; a switch connected to the terminals for receiving the voice signals and for acting as a protocol converter/adapter for the incoming digitized voice packets from the plurality of terminals; lines for connecting each of the plurality of terminals to the switch; wherein the switch further comprises a compression module for compressing the incoming voice signals into digitized voice packets when the incoming voice signals are uncompressed and for packaging the compressed digitized voice packets into a format compatible with web protocols; wherein the switch further comprises a bridging module for packaging the incoming compressed digitized data packets into a format compatible with web protocols when the incoming packets are compressed; and wherein the switch further comprises a combining/switching module within the switch for combining the formatted digitized voice and data packets into longer frames. Ching does not describe, teach or inherently provide every element of claim 13.

Claim 14:

Claim 14 adds that the lines are selected from the group consisting of PSTN lines, PABX lines, LAN lines, Internet lines, and other lines, which is not described, taught nor inherently provided in the Ching patent.

Claim 15:

Claim 15 describes a method for combining incoming digitized voice packets into longer frames, comprising receiving incoming voice and data signals; compressing the incoming voice signals to digitized data packets when the incoming voice signals are uncompressed; packaging the compressed digitized voice packets into a format compatible with web protocols; bridging the incoming data signals to digitized data packets when the incoming digitized data signals are compressed; packaging the bridged digitized data packets into a format compatible with web protocols; combining the formatted digitized data packets into first long frames; and transmitting the first long frames over a data network. Ching does not describe, teach or inherently provide every element of claim 15.

Lacking all the claimed elements, the reference cannot anticipate the present claims.

Since the cited reference does not disclose all the elements of the present invention, the reference cannot anticipate the present invention. Thus, lacking an element of the claims, the reference cannot anticipate the invention. <u>Carmen Indus., Inc. v. Wahl,</u> 220 USPQ 481, 485 (Fed. Cir. 1983).

Furthermore, the following (non-limiting) features additionally distinguish the invention from Ching and show why the two are inapposite:

> *   Ching requires dedicated long distant carrier lines to transport the voice; **the claimed invention works on already deployed general purpose packet networks;**

* Ching requires every packet of every channel to be demultiplexed and a routing header added before they can be switched by the packet switch; **the claimed invention only adds a microheader (much smaller than a routing header) to each voice packet and only one routing header per frame containing many voice packets;**

* If Ching is extended to a general purpose packet network, it would be different from the current situation where every voice packet has a routing header, causing a doubling in bandwidth compared to the voice bandwidth; **the claimed invention is precisely intended to get rid of routing header on every voice packet and keep the overhead low at packet format;**

* In Ching the packet switch is just a means to switch calls in a node, it is not a transmission element; **in the claimed invention the packet network is the transmission element.**

Thus, lacking the claimed elements, Ching cannot anticipate the claimed invention. Moreover Ching, being mutually contradictory with the claimed invention, cannot render obvious any of the claimed features, making all the present claims patentable over the reference.

For an invention to be anticipated, it must be demonstrated that each and every element of the claimed invention is present in the "four corners" of a single prior art, either expressly described therein or under the principle of inherency. Lewmar Marine Inc. v Barient Inc., 3 USPQ2d 1766, 1767-1768 (CAFC, 1987). The absence from prior art reference any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible, Inc., 230 USPQ 81, 84 (Fed. Cir. 1986).

"To establish inherency, the extrinsic evidence 'must make it clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it

would be so recognized by persons of ordinary skill.'" <u>In re</u>
<u>Robertson</u>, 48 USPQ2d 1949, 1951 (Fed. Cir. 1999) <u>quoting from</u>
<u>Continental Can Co. v. Monsanto Co.</u>, 20 USPQ2d 1746, 1749 (Fed.
Cir. 1991). "Inherency, however, may not be established by
probabilities or possibilities. The mere fact that a certain
thing may result from a given set of circumstances is not
sufficient. <u>Id.</u> 20 USPQ2d at 1749.

The present claims are patentable under 35 U.S.C. 103(a).

In considering the patentability of the present invention,
it is requested that the Board consider the invention as a whole,
consider the scope and content of the prior art as a whole,
consider the differences between the claims at issue and the
prior art, and consider the level of ordinary skill in the art to
which the invention pertains at the time the invention was made.
<u>Graham v. John Deere Co.</u>, 148 USPQ 459, 467 (1966).

THE INVENTION AS A WHOLE

The invention considered as a whole is best described by the
appended claims.

PRIOR ART AS A WHOLE

The prior art to which the invention pertains is typified by
the references of record.

DIFFERENCES BETWEEN THE INVENTION AND THE PRIOR ART

Each of the present claims defines unique features and each is individually patentable over the prior art.

The test in reviewing rejections under 35 U.S.C. 103 in which the examiner has relied on teachings of several references, is whether references, viewed individually and collectively, would have suggested claimed invention to a person possessing ordinary skill in the art, and citing references which merely indicate that isolated elements and/or features recited in the claims are known is not a sufficient basis for concluding that combination of the claimed elements would have been obvious. In re Kaslow, 217 USPQ 1089 (Fed. Cir. 1983); In re Deminski, 230 USPQ 313 (Fed. Cir. 1986).

II. Claims 5-7 are patentable under 103(a) over Ching in view of Goldberg (US Patent 6,389,038).

As pointed out above, Ching teaches away from the claimed invention. Therefore, any further combination with other references will also lead away from the present claims.

The Goldberg method only applies to uncompressed voice and does not include the concept of the micro header. There is no motivation, teaching or suggestion to add the claimed micro header to the Goldberg frame structure. Contrastingly, the micro header allows for different types of data to be multiplexed (voice, fax, G729, G723.1 ... etc.) which adds considerable scope to the claimed invention, is absent in Goldberg, and cannot therefore render the claimed invention obvious.

In In re Fine, 5 USPQ2d 1596, 1599 (Fed. Cir 1988), the

Court observed:

> "Because neither [reference], alone or in combination,
> suggests the claimed invention, the Board erred in affirming
> the Examiner's conclusion that it would have been obvious to
> substitute the [secondary reference features] in the
> [primary system]. The [references] disclose, at most, that
> one skilled in the art might find it obvious to try the
> claimed invention. But whether a particular combination
> might be 'obvious to try' is not a legitimate test of
> patentability. In re Geiger, 2 USPQ2d 1276, 1278 (Fed. Cir.
> 1987); In re Goodwin, 198 USPQ 1, 3 (CCPA 1978).

Thus, there is no prima facie case of obviousness with

respect to any of the claims.

Claim 5:

Claim 5 describes the first lines being selected from the

group consisting of PSTN lines, PABX lines, LAN lines, Internet

lines, and other lines, which is nether taught nor suggested by

the references.

Claim 6:

Claim 6 defines that the second line is selected from the

group consisting of ethernet lines, V35 lines, G704 lines, and

other lines, which is not taught nor suggested by the references

Claim 7:

Claim 7 adds that the data network is selected from the

group consisting of an Internet protocol (IP) network, a frame

relay network, an X25 network, a leased line network, and other

networks, which is not taught nor suggested by the references.

Claim 14:

Claim 14 adds that the lines are selected from the group

consisting of PSTN lines, PABX lines, LAN lines, Internet lines,

and other lines, which is not taught nor suggested by the references.

Goldberg assumes that all packets in the superframe have the same length (no micro header) while NOP does not assume this. Therefore different types of traffic can be multiplexed with NOP but not with the Goldberg method.

The Examiner's observation that "it would have been obvious to one of ordinary skill in the art ... to combine Goldberg with Ching "**so as to have an updated and current integrated voice and data network providing an efficient and cost effective communications network**" is not well taken, because it flies against the requirement for an obviousness holding mandating some teaching or suggestion within the references rather than hindsight construction.

"It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." In re Fritch, 23 USPQ2d 1783, 1784 (CAFC, August 1992), quoting from In re Gorman, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). "This court has previously stated that one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." **Id**. quoting from In re Fine, 5 USPQ2d 1600 (CAFC, 1988).

There is no substantiating evidence of such teaching or suggestion within the references nor in the office action. The claimed invention is unique and non-obvious because compression

inherently includes different packet sizes and types (silence,

G723.1, G729, Fax ... etc.).

The Board, in <u>Ex parte Levengood</u>, 28 USPQ2d 1300, 1301

(Board of App. and Inter. 1993), observed:

> "The only suggestion for the examiner's combination of the
> isolated teachings of the applied references improperly
> stems from appellant's disclosure and not from the applied
> prior art. <u>In re Ehrreich, 200 USPQ 504 (CCPA 1979)</u>. At
> best, the examiner's comments regarding obviousness amount
> to an assertion that one of ordinary skill in the art would
> have been able to arrive at the appellant's invention
> because he had the necessary skills to carry out the
> requisite... steps. This is an inappropriate standard for
> obviousness."

That [the prior art] might incorporate elements which could

be used in appellants' system does not render appellants' claims

obvious when there is no suggestion of using these elements in

substantially the same manner as appellants use them. <u>In re</u>

<u>Donovan</u>, 184 USPQ 414, 421 (CCPA, 1975).

Nothing in the references teaches, suggests or motivates one

of ordinary skill in the art to combine the references in the

manner proposed by the Examiner.

III. <u>Claim 11 is patentable over Ching in view of Chuah (US</u>
     <u>Patent 6,408,001)</u>.

As pointed out above, Ching teaches away from the claimed

invention. Therefore, any further combination with other

references will also lead away from the present claims.

Chuah is only a router to router IP header removal technique

by label assignment and therefore it is not multiplexing like

NOP. It requires all routers to co operate which is not required

with NOP. The 3-bytes header referred to in the Chuah method is not a micro NOP header but just one application of what a VoIP application could generate for its own purpose. These 3-bytes are not used in the Chuah method which only deals with the IP header.

Obviousness is tested by what the combined teachings of the references would have suggested to those of ordinary skill in the art. It cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Teachings of references can be combined only if there is some suggestion or incentive to do so. In re Fine, 5 USPQ2d 1596, 1599 (CAFC, 1988).

Claim 11:

Claim 11 adds that the combining the formatted digitized data packets into the first long frames further comprises adding a 4-byte control information header to each of the digitized data packets prior to combining the digitized voice packets, which is not taught nor suggested by Ching and Chuah.

The present invention, NOP, is an innovative use of voice compression packet bundling and switching technique which is not taught, suggested or inherently provided by the references of record. Nothing in the references teaches or suggests adding a micro header inside the superframe to split the payload in a more generic way rendering the present claims patentable over the references.

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Citing In re Gordon, 221 USPQ, 1127, the court pointed out, "the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification". In re Fritch, 23 USPQ2d 1783, 1784 (CAFC, August 1992). In the same case, In re Gordon, the court found a proposed modification inappropriate for an obviousness inquiry when the modification rendered the prior art reference inoperable for its intended purpose, which is exactly the resultant effect of combining Ching and Chuah.

Nothing in the references, either singly or in combination, teaches or suggests the claimed features. Therefore, the references cannot anticipate nor render obvious the present invention as claimed.

In deciding that a novel combination would have been obvious, there must be supporting teaching in the prior art. There is no suggestion or motivation in the prior art to combine the elements as done by the present invention and hence the claims cannot be rendered obvious. In re Newell, 13 USPQ2d 1248, 1250 (CAFC, 1989).

LEVEL OF ORDINARY SKILL IN THE ART

A person having ordinary skill in the art is an artisan being taught the reference teachings.
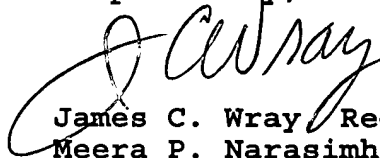
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SUMMARY

Each of the present claims is patentable under 35 U.S.C. 102(b) over the prior art of record.

When considering the present invention as a whole and the prior art to which the invention pertains as a whole, when considering the differences between the present invention and the prior art, and when considering the level of ordinary skill in the art to which the invention pertains, it is clear that the invention would not have been obvious under 35 U.S.C. 103(a) to a person having ordinary skill in the art at the time the invention was made.

CONCLUSION

Reversal of the Examiner and allowance of all the claims are respectfully requested.

Respectfully,

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